

ANNOTATED LISTS OF ACULEATE HYMENOPTERA (EXCEPT
HETEROGYNA) AND CHRYSIDS RECENTLY COLLECTED
IN MESOPOTAMIA AND NORTH-WEST PERSIA.

BY

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(*With four Text Figures.*)

The greater part of the specimens recorded in these Lists—about three-quarters of the whole number—were taken by Captain P. A. Buxton (then of the Royal Army Medical Corps) either in Mesopotamia in 1918, or in N. W. Persia (near the South end of the Caspian Sea) in the following year. Together with these, and distinguished from them by being placed between square brackets [.], are included some captures made during the same period by two other officers of the R. A. M. C., namely, Captain W. Edgar Evans and Lieut. P. H. Harwood, the latter of whom collected in Mesopotamia only, and the former (partly in company with Captain Buxton) both in Mesopotamia and Persia. All records to which no statement to the contrary is added, may be assumed to have reference to specimens taken by Captain Buxton; and in these cases I have generally given the *day* and *month* of capture, but have thought it unnecessary to add the year, as this may always be inferred from the locality cited—1918 if the locality be Mesopotamian, and 1919 if it be Persian. (The letter (M.) attached to the name of a place indicates that it is in Mesopotamia, and similarly the letter (P.) that it is in North-West Persia.)

Captain Buxton forwarded to me all the specimens taken by him, a few at a time, as soon as possible after capture so that I could examine them while still comparatively fresh, and they have been in my hands ever since. These, therefore, I have been able to study at my leisure, and revise from time to time my first provisional determinations of them. Those which I received from my other correspondents were returned to the captors (named or unnamed) as soon as I had taken note of them, but I have lately examined afresh some of those taken by Captain Evans, and confirmed or corrected my first impressions about them. I understand that I have now seen nearly all his captures, and the rest are probably all duplicates of species already included in my Lists. I am much obliged to Captain Evans's father, Mr. W. Evans, F.R.S.E., etc., for communicating with me on this subject, and forwarding to me the specimens. Although the collection is small as compared with Captain Buxton's, it contains several insects, not included in the latter, which have especially interested me. Lieut. Harwood took only a very few *Aculeata*, but I have to thank him also for enabling me to make some welcome additions to the Lists. I should add that all my correspondents were mainly interested in other orders, and consequently that Hymenopterists should be grateful to them for sparing some of their valuable time towards the advancement of knowledge in a subject other than their own. So far as I know, only a few Russian Hymenopterists have collected in Transcaspia, and still fewer in Mesopotamia. In both these countries the Hymenopterous fauna appears to be almost exclusively Palearctic. That of N. W. Persia seems, if one may judge such matters from the evidence of a single year's collecting there, to be practically European, a large proportion of the species occurring even in England, and most of them in Central Europe and the Balkan Peninsula. That of Mesopotamia has a more Southern character. A good many of its species occur, to my knowledge, in Egypt, and others are pretty widely distributed round the Mediterranean. But, except *Polistes hebraeus* and *Xycolopa fenestrata*, I know of none, which can be thought to have reached

Mesopotamia by extending their range from Oriental centres of distribution, and both these are quite likely to have been introduced into the country—accidentally of course—by importation, in ships or otherwise. I have ventured to describe a few forms as new, but only because, being unable to recognize them in descriptions previously published, I could deal with them in no other way without violating a principle, which I think is sound—viz. that it is better to be the author of a “Synonym” than of a “Homonym.” The former can do no great harm, but the latter remains a perpetual cause of confusion to future workers. Yet, no doubt, I must have some times committed both these offences unwittingly, for though I have carefully studied such descriptions as I could meet with—especially those of Morawitz in *Hor. Ent. Soc. Ross.*, *Fedtschenko's Reise*, etc., for Persian forms, and of Klug in *Symb. Phys.* for Mesopotamian—I have not had access, unfortunately, to any of their “Types.” Nor have I had the advantage of such help as has been kindly given me on previous occasions by many of my foreign correspondents, except in one case,—Herr Alfken having been so good as to examine and give me his opinion about several specimens of the Genera *Hylaeus* (=*Prosopis*) and *Halictus*. Consequently I have had to trust far more than pleases me to my own judgment in deciding on determinations of insects that were new to me. I need hardly say, that, besides my own collections made in Egypt, Syria, etc., I have also studied with a view to this paper the “E. Saunders” and other collections in the Natural History Museum; but these unfortunately contain very few specimens of either Transcaspian or Mesopotamian Aculeates, and even of these few most are either nameless or named doubtfully, and perhaps in error. I should mention, however, that some of Captain Buxton's earlier “sendings” reached me while Mr. R. E. Turner was still working in the Museum, and that I was able to obtain his valuable assistance in clearing up some of the questions about which I was in doubt.

I should have been glad, if it had been possible, to make this paper more attractive by adding to it something about the “topographical” characters of the localities mentioned in it—something more than their bare names! But I understand that such subjects will be discussed in two* other papers now being prepared for publication in this Journal, and that each will be accompanied by a Map, shewing the exact situation of such places in either of the countries dealt with as are mentioned in these Lists.

I have only to add that the Text-figures given in them to illustrate structural details, except Fig. 4, were either drawn from the objects with a “Wollaston Prism,” or traced from their images thrown on the focussing screen of a Photo micrographic Camera, so that, though I am no artist in draughtsmanship, I believe that they are correct as to measurements, etc., in proportion of course to their various magnifications.

LIST 1. FOSSORES.

1. *Apterogyna Olivieri*, Latr.—♀ “desert near Amara” (M), “running rapidly on the bare earth,” 8th September 1918. [Another ♀ “on Tamarisk” 14th October 1918.—Captain Evans.]
2. *Mutilla (Ephutomma) Sanguinicollis*, Kl.—13 ♂♂ Amara (M), 28th May—2-19th June, 16-24th September [Also 2 ♂♂ “at light” at or near Amara (M) 6, 12th August—Captain Evans].

* (1) Birds of N.-W. Persia by P. A. Buxton appearing in this number.

(2) Mammals of Mesopotamia by R. E. Cheesman, Vol. 27, No. 2.

I have little doubt that this is the true *Sanguinicollis* Kl. Possibly *continua*, F. may be its ♀, in which case the Fabrician name would have priority.

3. *Mutilla (Myrmosa) erythrocephala*, Latr.—1 ♀ Khaniqin (M), 1st August.

4. *Mutilla catanensis*, Rossi.—1 ♀, Baquba (M), 27th July.

1 ♀, Baghdad (M), 10th September.

[1 ♀, at or near Amara (M), 7th September 1918—Captain Evans].

5. *Mutilla chrysopthalma* Kl.—4 ♂♂, Amara (M), 20th June, 17th July, 7th September. [1 ♂ at or near Amara (M), 7th September 1918—Captain Evans].

There is some mystery about this and the last species. It will be noticed that both my correspondents found only ♂♂ of *chrysopthalma* and only ♀♀ of *catanensis*. Furthermore, Captain Evans took his *chrysopthalma* ♂ and, *catanensis* ♀ together, and, at the time, was under the impression that they were paired, or on the point of pairing, though they were not actually paired when he took them out of the net!

It seems, however, to be well established, that the proper ♂ of *catanensis* is *floralis*, Klug, a form which, though evidently akin to *chrysopthalma*, is superficially at least, quite unlike it. Nor are the ♀♀ of *catanensis* and *chrysopthalma* so much alike that there can be any difficulty in distinguishing them. And in the Natural History Museum at South Kensington I find (a) a specimen of *floralis* actually paired with a ♀ of *catanensis*, and (b) a ♂ like those from Amara similarly actually paired with a ♀ of *chrysopthalma*, both these pairs having been taken on the same day and at the same place—namely, on April 14th, 1895, at Aden, by Colonel Yerbury.

This Amara ♂, which I suppose to be the proper mate not of *catanensis* ♀, but of *chrysopthalma*, Klug, seems to be undescribed. So far as actual "structure" is concerned it appears to me to have all the most characteristic features enumerated by André (*Species VIII*, p. 109) in his very complete and satisfactory description of *catanensis* ♂ (= *floralis*). Nevertheless the two forms are separable at a glance, though their differences are almost entirely matters of coloration and pilosity. Thus in *catanensis* (*floralis*) the wings are entirely fuscous; the thorax is largely red; the pilosity is mostly yellowish, not strongly contrasting with the red colour of the abdomen, so that André describes the second and following segments, as uniformly clothed with "pubescence d'un ferrugineux doré, sans bande de pubescence blanche." In *chrysopthalma* on the contrary the bases of the wings are quite clear and colourless; the thorax is entirely black; and the whole pilosity of the insect is pure white, forming perfectly distinct and well defined silvery fasciæ across the base and apex of the 2nd segment and the apices only of the three following segments (only after segments 5 can it be described as clothing the integument uniformly, without distinct apical bands")

6. *Mutilla dalmatica* André (?).—This species was not met with by Captain Buxton, but I have been kindly presented by Lieut. Harwood with two ♀♀ and a ♂ which apparently belong to it. He took them with several other specimens of both sexes near Baghdad in October 1918.

The ♂ seems to be undescribed. It is much smaller than *chrysopthalma*, but otherwise very like it, having similar pilosity, (though the abdominal fasciæ are somewhat less conspicuous) and wings with clear hyaline bases. But the tuberculation of the scutellum is merely rounded, not acutely conical. And only the two first segments of the abdomen are red, the rest of it, as well as the whole head and thorax being black. (Long. about 10 mm. Exp. alar. 16 mm.)

7. *Mutilla littoralis*, Petagn.—Var *grisescens*, September.

1 ♂, Amara, 27th October 1918.

8. *Mutilla rufipes*, F.—Var. *ciliata*, Pz. 1 ♂, Amara, 17th June, 1 ♂, Shahroban (M), 31st July.

Var. *platiensis*, Dest. 1 ♂ Qazvin (P), 17th July.

9. *Mutilla (Dasylabris) maura*, L.—2 ♂♂ (Var. *arenaria*, F) Talysh (P), 10th July.

1 ♀, Menjil, 29th March.

[1 ♀ on *Tamarix* 5 miles above Amara (M), 14th October 1918—Captain Evans].

10. *Myzine arabica*, Guer.—(?) 1 ♂, Baquba (M), 27th July.

11. *Myzine fasciculata*, E. Saund.—(?) 1 ♂, Qazvin (P), 17th July.

I have done my best to identify these ♂♂ of *Myzine*, but I feel very little confidence that I have named them rightly.

12. *Scolia (Triscolia) haemorrhoidalis*, F.—3 ♂♂ Talish (P), 10th July, 2 ♀♀ Astara (P), 2nd July, 3 ♀♀ Enzeli, (P), 14-26th June, 1st July; 4 ♀♀ Amara (M), May. [1 ♂, 1 ♀ "Common on Holly-hocks, etc." Beit Na'ama, Basrah (M), 27th and 31st March 1919—Captain Evans.]

The ♂♂ from Persia are very unlike normal South European specimens. Their pilosity is much paler, that on the thorax quite grey, and the yellow markings of the abdomen are singularly pale—very large and confluent, so that they appear rather as bands than as pairs of spots; and in all the specimens they occur not only on the 2nd and 3rd tergites, but on the 4th also. The ♂ from Beit Na'ama has no such peculiarities, and all the ♀♀ from both districts are quite normal.

13. *Scolia (Discolia) infuscata*, Kl.—9 ♂♂, 3 ♀♀, Amara (M), 4th May to 31st October.

1 ♂, 1 ♀, Baghdad (M), 26th July; 1 ♀, Khaniqin (M), 31st July.

[5 ♂♂, 2 ♀♀ at or near Amara (M), 2nd May, 20th June, 17th and 27th August 1918—Captain Evans.]

[2 ♂♂, Tanooma (M). No date stated. (Lieut. Harwood,.)]

14. *Scolia (Discolia) maura*, Kl.—1 ♂, Qazvin (P), 17th July.

15. *Scolia (Discolia) 4 punctata*, F.—1 ♀, Qazvin (P), 24th July.

16. *Scolia (Discolia) hirta*, Schrk.—1 ♂, Qazvin (P), 20th September.

17. *Elis (Triclis) 6-maculata*, F.—8 ♂♂, 3 ♀♀ Talish (P), 10th July.

18. *Elis (Dielis) marginata* Kl.—1 ♂, Baquba (M), 27th July.

19. *Elis (Dielis) eriophora*, Kl.—1 ♀, Baquba (M), 30th July.

This ♀ is described and figured by Kl. (*vide* Pl. XXVII of *Symb. Phys.* Fig. 6) under the name *vestita*. But he suggests that it is the ♀ of "the preceding species," i.e., of *eriophora* (Fig. 5 on the same Plate, a ♂.) I have taken both forms together in Egypt, and have no doubt that they are, as he thought, conspecific. In v. dalla Torre's *Catalogus*, however, *eriophora* is treated as a synonym of *albocollis* Chr., while *vestita* is referred to another species which he calls "collaris (Fabr.), Gmel."

I find it difficult to believe that this large and handsome *Dielis* can have anything to do with Fabricius's *collaris*, which is described by its author as a *Tiphia* of the size of *femorata* (!) It may, however, be identical with either or both of two other Fabrician species, namely, *T. nigra* and *T. thoracica*. Of these *T. nigra* was the first to be described, and on the whole seems to match the better of the two with Klug's figure and diagnosis. (The pilosity of the thorax

is called 'red' in *nigra*, 'cinereous' in *thoracica*. Still the 'type' of the latter may have been a faded specimen.) The *Catalogus* sinks both *nigra*, F., and *thoracica*, F., as synonyms of *albocollis*, Chr., and, as aforesaid, makes *eriophora*, Kl. a var. of the same species. All this appears to me to be rather conjectural! Nothing is known as to the 'habitat' of either *albocollis*, or *nigra*, and that given by Fabricius for *thoracica* is "the coasts of Malabar." Personally I am inclined to await further evidence, and in the meantime acquiesce in *eriophora*, Kl., as the oldest name which is known for certain to have been applied to the Egyptian and Mesopotamian species. A ♀ very like that of *eriophora* (= "vestita") is common in Algeria, but its ♂ seems to be always black-bodied, whereas all my Egyptian *eriophora* ♂♂ are coloured as in Klug's figure (i.e., with the abdomen for the most part orange.) This Algerian form was recorded by Saunders in Tr. Ent. Soc., Lond., 1901, and referred to *thoracica*, F. Whether they are really the Fabrician *thoracica*, and whether or not they are identical with *eriophora*, Kl., seem to me questions deserving further investigation.

20. *Tiphia femorata*, F.—1 ♂, Enzeli, 28th May.

21. *Psammochares* (= *Pompilus* auctt.) *melas*, Kl.—1 ♀, Amara (M), 20th September.

22. *Psammochares cingulatus*, Kl.—1 ♀, Amara (M), 10th June.

23. *Psammochares rutilus*, Kl.—1 ♂, Amara (M), 10th June.

[1 ♂, Tanooma (M), October 1918—Lieut. Harwood.]

24. *Psammochares modestus*, Kl.—1 ♂, Amara (M). 10th June, 2 ♀♀, Amara (M), 13th June and 19th July.

The ♀ ♀ agree with that described and figured in *Symb. Phys.* from Ambukohl in all important characters (size, general coloration, neuration and clouding of wings, unidentate claws, etc.), but the propodeum and posterior coxae are darker, (not bright red throughout like the mesonotum and scutellum,) but only a little rufescent in parts, and elsewhere black like the breast and abdomen.

The ♂ seems to be still undescribed. The present specimen was taken three days before one of the ♀ ♀, and in the same locality. It is coloured much like the ♀, except that the propodeum and coxae are black entirely, the last dorsal segment of the abdomen white and fringed with short silvery hairs at the apex, the last ventral segment testaceous, the head black (except the mandibles, sides of the face, and orbits of the eyes narrowly, these parts remaining red), and the greater part of the antennæ (from about the 4th joint to the apex) black. The body is clothed (much as in *plumbeus*) with a very short whitish pubescence only visible in certain lights. This particular specimen is much smaller than either of the ♀ ♀, (only about 6 mm. long.) but it is well known that individual specimens of *Psammocharidæ*—♂♂ especially—often vary much in size. (In this specimen the abdomen is very strongly compressed laterally—perhaps this is accidental, but it may possibly be a real character, so I mention it.)

25. *Psammochares (Platyderes) orchesicus*, Kohl.—1 ♀, Amara (M), 19th July.

26. *Psammochares (Platyderes) denticulatus*, Tasch.—1 ♀, Amara (M), 1st June.

I took a very similar specimen on Roda Island in the Nile, near Cairo, in 1896

[27. *Psammochares (Anoplius) luctigerus*, Costa (?)—1 ♀, "near Ruz, N. E. of Baghdad," 24th November 1918.—Captain Evans.

This ♀ is an *Anoplius* according to Sustera's tabulation of the *Psammocharidæ* (1912). It is entirely black with dark wings, much larger than *nigerrimus* (which is the nearest to it among British species). The propodeum has no remarkable features, and is almost without sculpture of any kind. All the unguiculi are toothed pretty strongly near their bases. The spines of the tarsal pecten are sharp and long, on which account I suspect it to be *luctigerus*, but I know that species only from Costa's description.]

28. *Cryptocerous* (= *Salius*, F) *bicolor*, F.—2 ♀ ♀, Amara (M), 19th June, 7th September.
 [2 ♀ ♀, Amara, 27th and 29th August 1918.—Captain Evans.]

29. *Sceliphron* (= *Pelopoeus*, Latr.) *caucasicum*, André—1 ♀, Kurna (M), 20th May. [1 ♀ Amara (M), 27th August 1918—Captain Evans].

30. *Sceliphron tubifex*, Latr.—

[1 specimen taken near Basrah (M) in October 1918 by Lieut. Harwood.]

I forgot to take note of the sex before returning this insect to its captor. But I observed that the scapes of its antennae were partly yellow. In this species they seem to be normally immaculate, but in *destillatorium*, Ill. (though otherwise a less highly coloured insect), I have always found them entirely yellow!

31. *Ampulex assimilis*, Kohl.—1 ♂, Amara (M), 19th June. [1 ♀, Lieut. Harwood. From Mesopotamia, but I have no note of the precise locality, nor of the date of capture].

Hitherto only ♀ ♀ of this species seem to have occurred. Kohl described it from specimens in the Vienna Museum, giving "Guinea" as their locality, but mentions that one of them came "angeblich von Bagdad." It is interesting to have confirmation of the latter record, which without such confirmation might reasonably be thought open to doubt.

Until I saw Lieut. Harwood's ♀ and identified it with the help of Kohl's monograph of the genus as *assimilis*, I thought that I had already determined the ♂ for certain as another of that author's new spp. namely, *gratiosa*. The latter, like *assimilis*, was described from Guinea, and also in one sex only—in this case the ♂! The characters of Captain Buxton's insect almost without exception are absolutely identical with those described by Kohl for *gratiosa* ♂: in fact the only points I can discover which might conceivably distinguish the two forms are as follows.

(a) The eyes of *assimilis* may perhaps be slightly nearer together on the vertex, the distance between them being only two-thirds of the length of the 3rd antennal joint, whereas in *gratiosa* it is simply called "hardly as long."

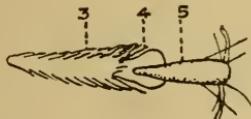


Fig. 1. 3 Last Joints of Hind Tarsi in *A. Assimilis* ♂.

(b) The fourth joint of the hind tarsi (Figure 1) is certainly not above half as long as either the fifth joint or the third (it is exactly as Kohl describes it in *assimilis* ♀!) But of *gratiosa* ♂ he says merely, that the fourth joint is "visibly" shorter than the third, at the same time calling it "about half as long as the fifth." From this it seems a probable inference that in *gratiosa* the 3rd and 4th tarsal joints differ less than in *assimilis*.

(c) Except a very slight ill defined cloud, filling the radial cell, but hardly extending beyond it, and another (still smaller) in the angle contained between the median vein and the brachial nerve (*n. transversus ordinarius*), I can find nothing in the wings of *assimilis* corresponding to the two feeble dark 'Querbinden' mentioned in the diagnosis of *gratiosa*.

(d) The mandibles of *assimilis*—at least in the specimen before me—are strongly rufescent. If this character occurs also in *gratiosa*, the author has not mentioned it.

An actual comparison of Captain Buxton's specimen with the Type of *gratiosa* might perhaps reveal other differences, or on the contrary might show that those above mentioned are unsubstantial.

In the meantime I will only add that in *assimilis* ♂, as in *gratiosa*, the 1st cubital nerve is completely aborted, but that in Lieut. Harwood's ♀ it is present though obsolescent. This character, however, is expressly stated by Kohl to be variable in ♀ ♀ of *assimilis*, and also in those of other *Ampulex* spp.

32. [*Chlorion* (=*Sphex* auct.) *Semenovi*, Morawitz.—1 ♀, Ruz Camp, N. E. of Baghdad, 15th November 1918—Captain Evans.]

I believe I have determined this splendid insect correctly, though I have not seen the Type, and have had to depend solely on the author's description of it *Hor. Ent. Soc. Ross.*, XXIV, 1890. This description appeared too late for Kohl to introduce the species into his Tables of *Sphex* L. published in the same year. But he reproduces the original description later on in his Monograph (No. 174 [p. 253] p. 451, *Ann. Nat. Hofm. V.*)

33. *Chlorion (Palmodes) melanarius*, Mocs.—1 ♀, Shahroban (M), 31st July.
 34. *Chlorion (Palmodes) argyrius*, Brull.—[1 ♀ "Garden below Amara," 5th June 1918—Captain Evans].
 35. *Sphex* (=*Ammophila*, K.) *occipitalis*, Morawitz.—2 ♂♂, Amara (M) 28th May.
 1 ♀, Amara (M), 4th, December 1917.

[1 ♂, 26th April, 1 ♀, 10th September 1918 "at or near Amara"—Captain Evans.]

36. *Sphex (Eremochares) dives*, Brull.—2 ♀♀, Amara (M), 28th May
 [1 ♂ "5 miles below Amara," 29th August—Captain Evans.]
 37. *Philanthus triangulum*, F.—1 ♂, 1 ♀, Talish (P), 10th June; 3 ♀♀, Enzeli (P), 14th June.
 38. *Philanthus coarctatus*, Spin.—1 ♂, Baquba (M), 27th July.
 39. *Cerceris emarginata*, Pz.—1 ♂, Baquba (M), 27th July; 1 ♀, Amara (M), November, 5 ♂♂, Qazvin (P), 17th to 24th July.
 [1 ♀, "about mud wall, garden or Tigris, above Amara," 16th September—Captain Evans.]

40. *Cerceris subimpressa*, Schlett.—3 ♂♂, Amara (M), 14 to 28th May; 1 ♀, Amara (M), 8th May.
 41. *Cerceris insignis*, Klug.—1 ♂, Amara (M), 28th May.
 42. *Cerceris bupresticida*, Duf.—2 ♂♂, Baquba (M), 27th July.
 43. *Cerceris spinipectus*, Sm. (=*prisca*, Schlett.) 5 ♂♂, Amara (M), 28th May to 26th June; 1 ♀, Amara (M), 13th June.

44. *Cerceris lutea*, Tasch.—4 ♂♂, Amara (M), 28th May to 14th June.
 This and the last species seem to me best separable by the sculpture of the propodeum, its "cordiform area" being quite polished and shining in *lutea*, but dull in *spinipectus*. (The coloration of the thorax appears to be variable on both forms, the mesonotum being sometimes quite black, and sometimes chiefly yellow. The latter is the case with all the Mesopotamian specimens of both species now before me. Of my own captures in Egypt and Palestine all which I take to be *spinipectus* have the mesonotum black, and all but one ♂ of *lutea* yellow!).

45. *Cerceris dacica*, Schlett. (?) var.—1 ♀, Qazvin (P), 17th July.
 A very highly coloured form, nearly answering to Schletterer's description of his var. *magnifica*. But the apical segment is entirely black.

46. *Cerceris*, sp?—1 ♂, Qazvin, 17th July.

Possibly a ♂ of *capitata*, Sm. But the abdominal fasciae are very wide, and not, as in *capitata* ♀, "subinterrupted." A ♂ sent to me from Madrid by Sn. Mercet as *capitata* differs from the present specimen only in being larger with narrower abdominal bands (none of them "subinterrupted"!) and smaller spots of yellow on the scutellum.

47. *Cerceris annexa*, Kohl.—1 ♂, 2 ♀ ♀, Amara (M), 9th September; 2 ♂ ♂, Fao (M), 10th August; 1 ♂, Khaniqin (M), 1st August.

48. *Nysson rufus*, Handl.—1 ♂, Amara (M), 25th June; 4 ♀ ♀, Amara (M), 14-25th June, 18th July.

49. *Sphecius uljanini*, Rad. (?)—1 ♂, Qazvin (P), 17th July.

I think this must be the ♂ of *uljanini*, and believe it has never yet been described.

It resembles *antennatus*, *luniger*, etc. in the form of its paradoxical intermediate metatarsi. The specimen before me, which is the only one I have seen, has unfortunately lost all but a few basal joints of its antennæ, but they seem to have been testaceous, except the scapes, which are yellow with *only their basal halves* blackened behind. The "pictura pallida" is of a light sulphur-yellow, and exceedingly copious. It occupies the whole face below the antennæ, and is continued upwards, along the inner orbits of the eyes, nearly to the level of the anterior ocellus; about half way between the upper end of each of these orbital yellow vittæ and the ocellus aforesaid there is a very minute and inconspicuous yellow spot. The edge of the pronotum is also yellow; as are the humeral tubercles; a square spot immediately behind them on the mesopleures; the front half of the tegulae (their posterior half being rather rufescent); the sides of the mesonotum (N.B.) very widely, these being occupied by a large yellow longitudinal vitta, which runs along the tegulae and is dilated downwards till it reaches the tubercles and fills the whole angle which separates them from the tegulae; a large oval mark on the scutellum; nearly the whole of the anterior legs, (even the coxae of the 1st pair are yellow in front!); the tarsi, tibiæ, and nearly half the femora of the hind legs; a large triangular spot occupying each side of the 1st segment; and very wide undulated subapical fasciae on each of those following (the extreme actual apices of the segments are dully rufescent!). These fasciae (except that on the apical segment) are to a certain extent continued on the underside of the abdomen forming triangular or sub-triangular maculae on the sides of each ventral-plate. The pilosity of the head and thorax is whitish. The neuration of the wings pale reddish-brown.

50. *Stizus tridens*, F.—1 ♂, Talish (P), 10th July.

51. *Stizus cyanescens*, Rad.—2 ♂ ♂, Amara (M), 10th July; Amara (M), 12th September. 2 ♀ ♀, Amara (M),—September.

52. *Stizus bizonatus*, Klug.—8 ♀ ♀, Amara (M), 8th June to 19th July.

53. *Stizus ruficornis*, F.—1 ♂, Talish (P), 10th July; 1 ♀, Enzeli, 30th June.

54. *Bembex bidentata*, v. d. Lind.—5 ♂ ♂, 2 ♀ ♀, Talish (P), 10th July.

55. *Bembex bicolor*, Rad.—4 ♂ ♂, 1 ♀, Amara (M), 9-17th September.

56. *Bembex oculata*, Latr.—2 ♀ ♀, Enzeli (P), 6-26th June.

57. *Bembex mediterranea*, Handl.—9 ♂ ♂, 5 ♀ ♀, Enzeli (P), 6th June.

58. *Palarus fabius*, Nurse.—2 ♂ ♂, 2 ♀ ♀, Amara (M), 9th September.

These were taken on *Zizyphus*. Mr. R. E. Turner helped me to determine them by comparison with a specimen presented by Col. Nurse to the Natural History Museum, S. Kensington. Though hitherto this species seems to be recorded only from India, Mr. Turner considers the genus to be really part of the Palearctic and Ethiopian fauna, and not "Oriental" (cf. his "Remarks on the genus *Palarus*" in *Ann. and Mag. Nat. Hist.*, May 1911).

59. *Liris haemorrhoidalis*, F.—1 ♀, Amara (M), 5th October [Taken also in both sexes by Lieut. Harwood.]

60. *Notogonia sculpturata*, Kohl.—3 ♂♂, Amara (M), 17th September on *Zizyphus*; 1 ♀, Resht (P), 18th February
61. *Notogonia subtessellata*, Smith.—1 ♂, Amara (M), 17th September; 2 ♀ ♀, Amara (M), 23rd March and 23rd Oct.
62. *Notogonia nigrita*, Lep.—1 ♀ taken by Lieut. Harwood.
63. *Tachytes dichroa*, Smith.—1 ♂, 5 ♀ ♀, Amara (M), 12th June to 19th July.
64. *Tachytes freygessneri*, Kohl.—1 ♂, Amara (M), 17th September.
65. *Tachytes tricolor*, F.—1 ♂, Amara (M), 15th June; 1 ♀, Amara (M), 26th June.

The ♀ seems to me certainly *tricolor* F. according to Kohl's diagnosis in his *Gattungen (etc.) der Larriden*; and I think the ♂ belongs to it, though its hind femora are largely black.

66. *Tachytes ambidens*, Kohl.—6 ♂♂, Amara (M), June 14-21, some (perhaps all?) visiting Acacia; 2 ♂♂, Amara, July 20th; 1 ♂, Amara (visiting *Zizyphus*), September 17th. *Ambidens* ♂ was described from Sarepta, I have not seen Kohl's Type, but have a ♀ named by that author from Biskra, and a ♂ which, I think belongs to it. Captain Buxton's Mesopotamian specimens are all much smaller than the latter, but I see no other difference between them and my own ♂, and both have certainly the chief characteristic of *ambidens* ♂—namely an excavation near the base of the front femur somewhat like that of a *Tachysphex* ♂. The pygidium in all of them is pilose, as in normal *Tachytes* spp.; and the distance between their eyes on the vertex, and the measurements of their antennal joints seem to agree with Kohl's statements as to his ♂ from Sarepta.
67. *Tachysphex græcus*, Kohl.—1 ♂, Amara (M), June 14th.
68. *Oxybelus lamellatus*, Oliv.—14 ♂♂, 4 ♂♂, Amara (M), September, mostly on *Zizyphus*; 1 ♀, Baghdad (M), 10th September.
69. *Oxybelus* 14—*notatus*, Jar.—3 ♂♂, Qazvin (P), 17th to 24th July.
70. *Oxybelus pugnax*, Oliv.—2 ♂♂, Amara (M); 17th September.
71. *Oxybelus*, sp. ?—2 ♂♂, Amara, 9th September.

A very small species, with whitish, translucent, straight and parallel-sided macro, red mandibles, and eburneous (nearly confluent) lateral markings on segments 1 and 2 of the abdomen. (I have something very like it, unnamed from Egypt.)

72. *Crabro (Entomognathus)* sp ? Qazvin (P), 17th July.

The specimen is broken, but I think it is a variety of *C. brevis* which has been recorded by Kohl from Egypt, with the collar, scutellum, knees, tibiæ, and tarsi yellow. The pygidium is of the normal width, so it is not *schmiedeknechti*, Kohl.

LIST 2. BEES

1. *Colletes nanus*, Friese—2 ♀ ♀, Amara (M), 28th May.
2. *Hylaeus* damascenus*, Magretti.—2 ♀ ♀, Shahroban (M), 31st July.
3. *Hylaeus scutellaris*, Morawitz.—1 ♂ and 1 ♀, Qazvin (P), 17th July.

The ♀ seems to me to have all the characters enumerated in Morawitz's description of *scutellaris* ♀. It is however a trifle smaller (about 6 mm. long, not 7,) and in addition to the yellow markings there mentioned has also the lower part of the frontal area, and a longitudinal streak bisecting the clypeus, yellow. In this it resembles *damascenus* ♀; but the ground colour of the clypeus is black, not red; and it differs also from normal examples of *damascenus* in having a black postscutellum, and entirely yellow tibiæ.

* *Hylaeus*, F= *Prosopis*, Jur.

The ♂, I believe, is undescribed. It differs from the ♀ only in the usual sexual characters, being considerably smaller (barely 5 mm. long) and more slender; the face more elongate and entirely pale yellow; the scapes of the antennae curved, slightly incrassate and dilated towards their apices, and yellow in front; the flagella more widely piceous than those of the ♀.

H. scutellaris was described in 1873 from "Bacu." I cannot find that it has ever been recorded since.)

4. *Hylaeus moricei*, Friese.—1 ♀, Qazvin (P), 17th July.

I took this species pretty commonly at Suez in 1896; Herr Alfken tells me that he has specimens from Araxes-thal and also from Hungary, so it is apparently widely distributed.

5. *Sphecodes gibbus*, L.—1 ♀, Amara (M), 8th June.

The specimen is broken, but I have no doubt it is a *gibbus*. As often in examples from S. Mediterranean districts, the tibiae and tarsi are testaceous.

6. *Halictus scabiosae*, Rossi.—1 ♂, 1 ♀, Amara (M), 12th September.

5 ♀ ♀, Qazvin (P), 8th August.

7. *Halictus quadricinctus*, F.—5 ♂ ♂, 4 ♀ ♀, Talish (P), 10th July.

8. *Halictus tetrazonius*, Kl.—1 ♀, Qazvin, 17th July.

9. *Halictus leucognathus*, n. sp.?—1 ♂, Baquba (M), 17th July.

Herr Alfken, to whom I sent this specimen, suggested, but with doubt, that it might be the *senilis* of Eversmann; but after careful consideration of the description of *senilis* I do not think this likely. That species is said to be smaller than *H. rubicundus*, whereas this is a large form—fully as large as *scabiosae*, *sexcinctus*, etc. Nor does Eversmann describe *senilis* as having the mandibles largely white, which is a conspicuous and very distinctive character of *leucognathus*, and has suggested the name which I propose for it.

In the Saunders' Coll. at South Kensington there is an unnamed specimen of the same ♂, taken in Greece by the late Sir S. S. Saunders, and bearing a label signed 'J. Vachal' remarking on the above peculiarity. Herr Alfken tells me, that he has a ♂ like the present specimen, and that this too was taken in Greece.

Although superficially much resembling *scabiosae*, etc., it seems to be really much more nearly allied to the smaller species *H. tetrazonius*, Kl. It agrees with the latter exactly, and differs from *scabiosae*, in the structure of the antennae, and the genitalia—also, to some extent, (as Herr Alfken observed) in the form of the head, though the mandibles are not dilated and the tempora (behind the eyes) are little if at all excavated beneath. (See Fig. 2.) The antennae (except their two black basal joints) are entirely testaceous, the apical joint is not curved, and all joints from the fourth onwards are tuberculate beneath as in *tetrazonius*. The other pale parts of the body—namely the apex of the clypeus, the labrum, a large triangular mark

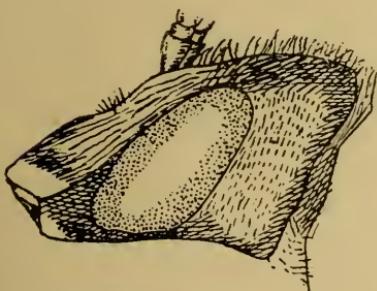


Fig. 2.

on each mandible and the greater part of the legs, which, as usual, are partly black (especially the anterior femora behind, and those of the hind legs in front also)—are not yellow (as according to Eversmann in *senilis*), but definitely white. The stigmata of the wings, however, and their veins (except the middle part of the subcosta which is fuscous) are yellow.

All the pilosity is snow-white or silvery, as in many "desert-forms". Tergites 1 to 5 of the abdomen have each a broad entire apical fascia, as in *scabiosae*, etc., and tergites 2 and 3 are also fasciated (but more thinly) at their bases. The

tempora in certain lights are seen to be covered with a very short silvery pubescence, the hairs on the face are much longer, and decumbent; on the vertex and round the antennæ they are erect.

I have extracted the genitalia, and they appear to me exactly like those of *tetrazonius*. But I do not think that this and the other points of agreement between forms differing so much in other characters (stature, colour, pilosity, etc.; etc.) would justify me in treating them as actually conspecific.

10. *Halictus platycestus*, Dours.—3 ♂♂, 5 ♀♀, Talish (P), 10th July.

3 ♀♀, Amara (M), "on Sunflowers," 9th—12th September.

I think these are conspecific with a ♀ which I received, named as above, from the late Professor Perez.

11. *Halictus leucozonius*, Kirby.—1 ♀, Amara (M), April.

1 ♀, Baquba (M), 30th June.

2 ♀♀, Baghdad (M), 26th July.

1 ♀, Talish (P), 10th July.

12. *Halictus chaldaeorum*, n. sp.—3 ♂♂, Amara (M), 6th September—31st Oct.

2 ♀♀, Shahroban (M), 31st August.

I can find no description to suit this species. It is a very diminutive member of the *leucozonius* group (5 to 6 mm. long). In its short broad form, in coloration, and in the sculpture of the propodeum, it comes near *interruptus*, Panzer. It seems also allied to *quadrinotatus*, Kirby, and *lativentris*, Schenck (= *decipiens*, Perkins). But it differs from all these in having the postscutellum densely tomentose in both sexes, in the uninterrupted and very conspicuous (almost, squamose) basal fasciae on the intermediate abdominal segments, in the characters of the ♂ genitalia, and the structure of the inner hind calcar of the ♀ as well as in other minor details.

In the ♂ the antennæ (beneath from the 3rd joint onwards), and the tegulæ are fulvous—almost yellow. The clypeus is narrowly yellow at the apex, but the labrum is black. The tarsi of all the legs are yellow, and the tibiæ (especially the anterior pairs) are more or less yellow within. The propodeum has a sharply defined, undulately rugose, basal area, which is narrowly truncate (not rounded) at its apex. The mesonotum is opaque, very finely and closely punctured. The postscutellum densely clothed with short erect pileæ, completely hiding its actual surface. The thorax and legs are hirsute (much more so than in *interruptus*). The abdominal tergites are very shining; finely but not closely punctured on their discs, but with the depressed apical margins practically impunctate. Tergite 1 is pilose at the base; 2, 3, and 4 have entire and very conspicuous basal fasciae of white and partly scale-like hairs. The 4th ventral segment is strongly excised at its apex and conspicuously fringed with long, white, decumbent hairs. The wings are clear, and the stigma yellowish.

The ♀ is very like the ♂, but the mesonotum is less closely punctured and slightly shining, and the disc of the 1st abdominal tergite quite impunctate.



Fig. 3. Hind Calcar of *H. Chaldaeorum* ♀.

The antennæ beneath and the tarsi are darker than in the ♂, but at least more or less fulvescent. The inner hind calcar is unlike that of any *Halictus* ♀ known to me, being armed with a single pair only of long blunt spines (See Figure 3). I notice also that the posterior ocelli are considerably nearer to the compound eyes than to each other. This is not the case in any of the other females with which I have compared these specimens.

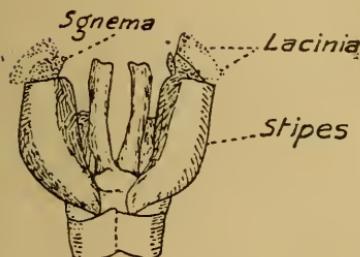


Fig. 4. Genital Armature of *H. Chaldaeorum*.

The genital armature of the ♂ has a singular character, but it is difficult either to describe or figure it intelligibly. The *squama* at the apex of each *stipes* (which in *notatus* is comparatively simple, and in *lativentris* is so pilose that it can hardly be seen at all) is in this species crossed and partly concealed (in the dorsal view) by a long semitransparent 'lacinia' clothed with microscopically fine pubescence, into which it (the *squama*) is produced. In the accompanying rough sketch (Fig. 4) drawn from a preparation mounted in balsam this lacinia is inevitably so much foreshortened as to give a

very unsatisfactory idea of its actual outline, but when viewed in such an aspect as to shew its full length it appears on the whole very elongately triangular, tapering gradually towards a bluntly pointed apex, and projecting to a considerable distance beyond the external outline of the *stipes*.

The species occurred visiting flowers of *Zizyphus*.

13. *Halictus longulus*, F. Smith.—1 ♂, Shahroban (M), 31st July.
1 ♂, Qazvin (P), 17th July.

14. *Halictus cingulatus*, Morawitz.—2 ♂♂, Qazvin (P), 17th July and 8th August.
5 ♀♀, Qazvin (P), 8th August.
1 ♀ Enzeli (P), 24th September.

15. *Halictus amaranus*, n. sp.—1 ♀, Amara (M), 7th July.

I feel some doubt whether this is more than a local race of *picipes*, Morawitz; but as Herr Alfken considers it to be certainly a new species "near *obscuratus* Mor." It may be as well to treat it as such provisionally.

The single specimen before me is in most beautiful condition. I find in it all the chief characters ascribed by Morawitz to *picipes* ♀—also apparently a "unicum"—including those by which he separates that species from *obscuratus* described immediately afterwards.

The coloration only seems to be rather brighter; approximately the apical half of each abdominal tergite is distinctly red, only its extreme apical margin is pale and scarious (yellowish); and all the tibiae and tarsi are flavescent; whereas in *picipes* only "the posterior tarsi" and "the hind tibiae" are described as "piceous," and of the abdominal tergites Morawitz says simply "apice pallide-rubro."

All the abdominal segments including the 1st are absolutely opaque (except their linear scarious yellow margins) and covered with an intensely fine and close puncturation. The propodeum is truncate, with a transverse, well defined, basal area, closely and irregularly but minutely rugulose, and sharply margined at the sides; the mesonotum, and especially the scutellum, more largely but less closely punctured than the abdomen, and so not quite dull; the postscutellum covered with dense short tomentum; the first four abdominal tergites have each a distinct and entire basal fascia of white hairs (some of which are scale-like), and those on tergites 3 and 4 are extremely broad (covering nearly half the segment). The sternites, like the tergites, have rufescent apices, and are clothed with many long sub-erect hairs of even length, forming almost such a "ventral brush" as characterizes the group "*Gastrilegidæ*." The whole of the above described pilosity is white, or rather colourless. The clypeus is moderately convex and produced, distinctly shining, with comparatively few, but large,

punctures. The mandibles are rufescent at their apices, the antennæ beneath, largely fulvous, the tegulæ, costæ, and stigmata of the wings, and the tibiæ and tarsi of all the legs, yellowish.

16. *Halictus kervilleanus*, Pérez?—1 ♀, Amara (M), 11th May.

I name this very doubtfully, though it agrees in most respects with Pérez's brief diagnosis, e.g., the mesonotum is extremely shining, *apparently* quite impunctate—the pin unluckily makes it impossible to be certain of this!—and the propodeum is also as described for *kervilleanus*. But the tibiæ and tarsi are largely flavescent, and if *kervilleanus* has that character the author has not mentioned it. (Seems also near to *pauxillus*!)

17. *Halictus villosulus*, Kirby—1 ♀, Qazvin (P), 8th August.

Determined for me by Herr Alfken. The mesonotum much more closely punctured than in British specimens.

18. *Halictus lucidulus*, Schenck.—1 ♂, 1 ♀. Qazvin (P), 17th July.

The ♀ was determined by Herr Alfken. I have no doubt that the ♂ belongs to it.

(The next 7 species all belong to the group with æneous reflections on at least the head and thorax. Spp. 22-25 were determined for me by Herr Alfken.)

19. *Halictus varipes*, Morawitz.—1 ♀, Amara (M), 17th September.

14 ♀ ♀, Amara (M), "on *Zizyphus*", 9th September.

3 ♀ ♀, Amara (M), 25th, 26th June and 18th July.

2 ♀ ♀, Qazvin (P), 17th July.

20. *Halictus vestitus*, Lep.—1 ♂, Khaniqin (M), 1st August.

1 ♂, Shahroban (M), 31st July.

To this species Herr Alfken refers *pulvercus*, Morawitz. The description of the latter well suits the specimen from Khaniqin. That from Shahroban is much rubbed, but I have little doubt the two are conspecific. Both have what Morawitz calls "appendix distinctus" at the middle of the margin of the 4th abdominal sternite.

21. *Halictus*, sp.?—1 ♀, Qazvin (P), 17th September.

A small insect, much rubbed, but it seems, when fresh to have been entirely covered with dense silvery pilosity. The head and thorax, dark metallic green, the abdominal segments carneous with yellowish margins. I cannot identify it with any described species.

22. *Halictus, dissidens*, Pérez.—1 ♀, Talish (P), 10th July.

23. *Halictus mucoreus*, Eversmann.—1 ♂, 1 ♀, Qazvin (P), 17th July.

24. *Halictus mongolicus*, Morawitz.—1 ♀, Amara (M), "on *Acacia*," 13th June.

25. *Halictus sogdianus*, Morawitz.—1 ♀, Baquba (M), 27th July.

26. *Nomioides variegata*, Oliver.—5 ♂ ♂, Amara (M), 9th-17th September.

1 ♂, Amara, November.

1 ♀, " 9th September.

This and also the following sp. occurred "on *Zizyphus*."

27. *Nomioides excellens*, E. Saunders.—6 ♂ ♂, Amara (M), 31st August—17th September.

1 ♀, Amara (M), 17th September.

I have named these after comparing them with Saunders's Types. They are much larger insects than any other *Nomioides* known to me.

(To be continued).